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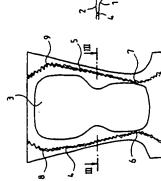
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(54) Tuk: A DIAPER AND A METHOD FOR ITS PRODUCTION



(S7) Abstract

permeable surface layer (1), at least one liquid-permeable surface layer (2), an elongated suction pad (1) disposed between the surface layers, and elsatic bands (4, 5) stretched on both sides of the surface layer (3) and arranged to follow, over the whole length of the disper, such respect to the longitudinal axis of the disper, the ends of the bands being positioned on the same line parallel with the longitudinal direction of the disper. According to the invention the elsatic bands (4, 5) are arranged to follow substantially signage shaped paths which are substantially targent to the suction pad (4) at points (6, 7) positioned within the area of one end of the suction pad and diverge from the pad at least up to points (8, 9) positioned within the area of the suction pad (3). The elastic bands (4, 5) are fixed in one of the surface layers (1, 2) at least between said points (6, 8). 7) The invention relates to a diaper and a method of producing such diapers. The diaper comprises at least one liquid im-

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- EP 458-538-A secondly - includes full-length signs clastic bands flanking 2/22/23 de Dispor assembly - includes full-length sheerbest pad KOLMI-SET OY 20.02 89-FT-000615

two full-length zig rag elastic bands. At opposed points near one end of the pad the elastic bands are tangential to the pad, and run back from those points in straight lines up to points near the other end of Diaper assembly, comprises an absorbent pad which is between permeable lining and waterproof backing, and which is flanked by D22 P23 + P21 (04.12.91) *WO0009169-A A61f-13/15 16.02.90 as 902789 Based on WO9009139(E) (6TG) SR.Pub R(AT BE CH DE DK ES FR GB IT LI LU NL SE)

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A disper and a method for its production

webs. corresponding to the longitudinal direction of the diapers, the longitudinal direction of the diapers integral diaper web which is cut into separate disper. In the method of the invention, the surface layers are fed in web form and joined into an perallel with the longitudinal direction of the ends of the bands being positioned on the same line spect to the longitudinal axis of the diaper, the whole length of the dieper, paths reversed with rethe surface layers and arranged to follow, over the elongated suction pad disposed between said surface least one liquid-permeable surface layer, at least one liquid-impermeable surface layer, at least over a part of their length to either one of the suction pad, the elastic bands being fastened at layers, and elastic bands stretched on both sides of This invention relates to a disper comprising

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35 30 25 addition, the elastic bands go relatively close to stretched loss within the area of the ends. In alleviate together by the elestic bands, and in an attempt to support causes the ends of the diaper to be pressed especially not at the ends of the disper. The lack of are not supported in any way over their length, suction pad up to the ends of the diaper, the bands bodiments where the elastic bands go outside the to the transverse central line of the disper. In emdiaper. These paths are also symmetrical with respect follow reversed paths over the entire length of the described above. In this diaper the elastic bands stance, discloses an incontinence disper of the type SE Published Specification 446 939, for inthis drawback, the bands have

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vide a new diaper which avoids the above drawbacks This is achieved by means of a disper according to the invention which is characterized in that the elastic bands are substantially tangent to the linearly at least up to points within the area of the The object of the present invention is to proand provides the best possible fit and tightness. the suction pad and diverge from it substantially other end of the suction pad. The method of producing a diaper of this kind is characterized in that the elastic bands are arranged to follow zigzag paths which are substantially tangent to the suction pad at points within the area of one end of the suction pad of each diaper and diverge from it substantially suction pad at points within the area of one end of linearly at least up to points within the area of the other end of the suction pad.

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tangent to the suction pad are preferably positioned The points at which the elastic bands are within the area of the front and of the diaper.

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In the diaper of the invention the elastic bands are supported to one end of the suction pad, so that the elastic bends can be properly stretched within the middle region of the diaper, which is to raising the edges of the disper upward and forming a be positioned between the legs of the user, thus prevents diaper leakage. As the elastic bands are supported to the suction pad so that the bands can be stretched tight, it can be ensured that the edges of the diaper cup-shaped structure which efficiently

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are positioned tightly around the thighs of the user.

In the following the diaper of the invention will be described in greater detail with reference to the attached drawings, wherein

Figure 1 shows a first embodiment of the diaper of the invention;

the Figure 2 shows a second embodiment of diaper of the invention;

the middle region of the diaper of Figure 2 along the Figure 3 is a cross-sectional view of line III-III;

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Figure 4 shows a third embodiment of the diaper of the invention; and

Figure 5 shows a fourth embodiment of diaper of the invention.

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The diapers shown in Figures 1 to 5 comprise a impermeable to liquid, such as plastic, and a second first surface layer l of a material substantially positioned against the body of the user. An elongated suction pod 3 is fixed between the surface layers. The suction pad may consist of, for instance, cotton or liquid-permeable surface layer 2 to be

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cellulose crush and optionally comprises a region made of a superabsorbent material. Elastic bands 4 and 5 are provided on the sides of the disper between low paths reversed with respect to the longitudinal axis of the diaper so that their ends are positioned direction of the diaper. This is due to the fact that the surface layers 1 and 2. They are arranged to folsubstantially on the same line in the longitudinal the diaper of the invention is made of a web formed by 'the surface layers, the individual diapers being cut off the diaper web. In the invention, the elastic bands 4 and 5, which may be formed by one or more separate bands which may be of different width, are 25 30 35

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to the end to the positioned at the front of the close to the front end of the diaper, that is, close are tangent to the suction pad 3, are positioned points 6 and 7, at which the elastic bands 4 and 5 points 7 and 9, respectively. In the invention, the 1 and 2 at least between the points 6 and 8 and the and 5 are fixed in at least one of the surface layers erals 8 and 9. It is assential for the operation of other end of the suction pad 3. In Figures 2 and 5, at points 6 and 7 within the area of one end of the the diaper of the invention that the elastic bands 4 these points are indicated with the reference numleast up to certain points within the area of the suction pad 3 and diverge from the suction pad at they are substantially tangent to the suction pad 3

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35 30 V 20 elastic bands 4 and 5 are not able to pull together rigidity than the rest of the diaper. In this way the which it is to be used. Another factor contributing the suction pad 3 having a considerably greater suction pad 3 in the direction from the points 6 and bands 4 and 5 are supported at the points 6 and 7 to to the formation of the cup shape is that the elastic the diaper is bent in the middle into the shape in 4 and 5 to raise the edges of the diaper upward when 7 toward the other end of the suction pad, that is, and 7. The elastic bands 4 and 5 are attached to the elastic bands 4 and 5 are bent only at the points 6 toward its rear end. This divergence causes the bands figures, the elastic bands 4 and 5 diverge from the stantially wedge-shaped. As clearly appears from the of Figure 1 and Figure 4, the suction pad 3 is subdiaper over their entire length. In the embodiments In the embodiment shown in Figure 1, the

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5 Ç diaper so that they will be positioned within the hip strips are to be fastened to the front portion of the area of the user. least one adhesive tape 12 by means of which the dicated with broken lines. Each atrip comprises at the diaper, Figures 1 and 4 show strips 10 and 11 inwhen the diaper is in use. To illustrate the use of caused by them. An advantage of this is that the front portion of the diaper will not hang loosely ficiently rigid to compansate for the traction forces the front portion of the diaper as the pad 3 is suf-

15 layers 1 and 2 over their entire length. and 5 are also fixed in at least one of the surface embodiments of Figures 1 and 4 for the same reasons. result, a similar cup shape is obtained as in the and θ and the points 7 and 9, respectively. As a In the embodiment of Figure 2, the elastic bands ϕ diverge from the suction pad 3 between the points 6 rear end, so that the elastic bands 4 and 5 generally erally widens toward its one end, that is, toward its bodiments of Figures 2 and 5, the suction pad gen-Figure 2 corresponds to that of Figure 5. In the emas the suction pad 3 is concerned, the embodiment of a zigzag path over the length of each diaper. As far and 5 comprise two bends. So the elastic bands follow somewhat hourglass-shaped and both elastic bands 4 in Figure : in that the suction pad 3 is therein shown in Figure 2 differs from the embodiment shown The embodiment of the disper of the invention

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curled band sections extending from points 6 and 7. 4, these sections 13 and 14 are shown as loosely 6 and 7 toward the front end of the diaper. In Figure not been glued in sections extending from the points of Figure 1 in that the elastic bands 4 and 5 have The embodiment of Figure 4 deviates from that

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13 and 14 extending from the points 6 and 7 toward the front portion of the diaper and band sections 15 and 16 extending from the points 8 and 9 toward the tangent to the suction pad 3 at points within the ment of Figure 5 are positioned relatively close to Figure 5 shows still another embodiment of the diaper of the invention, in which the band sections rear portion of the diaper are not fixed. The operation of the diaper of Figure 5 does not differ from invention, that is, the elastic bands 4 and 5 are front portion of the diaper and diverge from the pad in the direction toward the rear end of the diaper at the rear edge of the suction pad 3, being fixed in at least either one of the surface layers between the ment also comprises the importent features of the least up to the points 8 and 9, which in the smbodithat of the embodiment shown in Figure 2. The embodipoints 6 and 8 and the points 7 and 9, respectively. 2 15 20

In the production of the diaper of the invention, the surface layers 1 and 2 are both fed in web form, the suction pads being attached by gluing, for instance, to the web 1, for instance, with suitable spacing. The elastic bands 4 and 5 are then fastened by gluing or hot sealing beside the suction pads according to the principles of the invention. Thereafter at least one liquid-permeable surface layer 2

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is added to the diaper web. At this stage the web is cut into separate diapers. The required connecting strips can be attached either to the diaper web or to separated diapers by gluing, for instance. Alternatively, the diaper web can be formed by attaching the suction pad 3 and the elastic bands 4 and 5 to the liquid-permeable surface layer 2, the web forming the liquid-impermeable surface layer 1 being attached to the surface layer 2. Furthermore, it is possible to attach the suction pads 3 to one surface layer and the elastic bands 4 and 5 to the other surface layer. Whereafter the webs so obtained are joined to form the finished diaper web.

The disper of the invention and the metiod of way of example by means of some specific embodiments, and it is to be understood that they can be modified in many ways without deviating from the basic idea of the invention and the scope of protection defined in can be altered without affecting the workability of producing such diapers has baen described above by the attached claims. Accordingly, the general shape of the diaper as well as that of the suction pad 3 stance, can be fully rectangular or hourglass-shaped verse direction. Similarly, the entity formed by the the idea of the invention. The suction pad, for inand symmetrical both in the longitudinal and translongitudinal and transverse direction provided that the elastic bands can be positioned as required by surface layers may be symmetrical both in the invention.

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least over a part of their length to either one of pad (3), the elastic bands (4, 5) being fastened at bands (4, 5) stretched on both sides of the suction (3) disposed between said surface layers, and elastic permeable surface layer (2), an elongated suction pad impermeable surface layer (1), at least one liquid-2. A disper comprising at least one liquid-

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diaper, characterized ling parallel with the longitudinal direction of the with respect to the longitudinal axis of the diaper, the ends of the bands being positioned on the same over the whole length of the diaper, paths reversed the surface layers (1, 2) and arranged to follow, in that

0 within the area of the other end of the suction pad substantially linearly at least up to points (8, 9) one end of the suction pad (3) and diverge from it suction pad (3) at points (6, 7) within the area of elastic bands (4, 5) are substantially tangent to the

15 elastic hands (4, 5) are tangent to the suction pad of the disper. (3) are positioned within the area of the front end terized 3. A disper according to claim 2, characin that the points (6, 7) at which the

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